

Abstract

Providing semiconductor integrated circuit apparatus capable of controlling the substrate voltage of a MOSFET so that the drain current for an arbitrary gate voltage value in a subthreshold region or a saturated region will be free from temperature dependence and process variation dependence, thereby enhancing the stable operation.

The semiconductor integrated circuit apparatus includes: an integrated circuit main body having a plurality of MOSFETs on a semiconductor substrate; a monitor unit for monitoring at least one of the drain currents of the plurality of MOSFETs; and a substrate voltage regulating unit for controlling the substrate voltage of the semiconductor substrate so as to keep constant the drain current. The monitor unit includes a constant current source and a monitoring MOSFET formed on the same substrate as the plurality of MOSFETs, the substrate voltage regulating unit includes a comparison unit for comparing the source potential of the monitoring MOSFET with a predetermined reference potential with the drain terminal of the monitoring MOSFET and the drain terminals of the plurality of MOSFETs connected to the ground potential, and substrate voltage regulating unit feeds back the output voltage output based on the comparison result by the comparison unit to the substrate voltage of the monitoring MOSFET.